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REMARKS

Applicants' attorney is appreciative of the interview granted by the Examiner to the undersigned and to Applicants' represetative Deborah Gador on February 14, 2007. At that interview, Applicants' attorneys discussed how the packets formed according to the invention contain segments of services having different protocols.

Claims 19 and 12-16 have been rejected under 35 USC 112, 1st paragraph, as containing subject matter not described in the specification. In particular, it is alleged that the specification as originally filed does not describe or illustrate two service ports. Claim 19 has been amended to delete the reference to two service ports, and withdrawal of this rejection is requested.

Claims 1, 3, 4, 7-10, 12-20 have been rejected under 35 USC 102(e) as being anticipated by US 6,331,978 to Ravikanth, and claims 2, 5, 6, 11 have been rejected under 35 USC 103(a) as being obvious over Ravikanth in view of the article to Ndousse.

The Office Action alleges that Ravikanth discloses a method for packet processing comprising adding a label to the front of a datagram, where adding a label is interpreted as adding a tag, and where the datagram is interpreted as a segment. The presence of a datagram has also been interpreted as being preceded by a form of segmentation of a bit stream of data of at least one service. Regarding claim 18, it is alleged that Ravikanth implicitly discloses receiving datagram of multiple services, pointing to column 5, lines 14-17.

The invention relates to a method for packet preparation and processing for transmission of various types of data services (e.g., data, voice, video, etc.) over an optical fiber. For purposes of the invention, "services" refers to so-called "native services." Examples of native services,

each having its own bit rate and protocol, are illustrated in the application (TDM, ATM, Ethernet, Fibre Channel, PDH, Frame-Relay), as well as in the definition of Pseudowire (PW) in Wikipedia, copy attached hereto, as follows: "PW is an emulation of a native service over a Packet Switched Network (PSN). The native service may be ATM, Frame Relay, Ethernet, low-rate TDM, or SONET/SDH, while the PSN may be MPLS, IP (either IPv4 or IPv6), or L2TPv3."

Conventional packets are known only for certain data services, particularly Ethernet and Fibre Channel packets. Other services, such as voice and video streaming services, among others, cannot be inserted, as they are, into these types of packets. Rather, they must be converted to another protocol, such as IP protocol, in order to be inserted into a transmission frame. As stated in the Background of the Invention (page 1, lines 16-19), at present, data according to each protocol must be transmitted via its own network, and data at different bit rates must be transmitted separately or converted to another protocol before being transmitted simultaneously with other data rates and/or types over a higher bit rate medium. Thus, in conventional methods, two additional steps (conversion and re-conversion) are required in order to permit more than one service to be transmitted together.

The heart of the invention thus lies in combining different services, in their original protocols, into the same packet, in order to provide improved utilization of the available bandwidth. This is accomplished by receiving and identifying incoming bit streams of data containing at least two services (one service per bit stream), segmenting each bit stream in its original protocol into variable length segments, and adding a tag to each segment to identify the service of the segment. Tagged segments from two or more bit streams are

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processed into a single packet, which can act like a conventional Ethernet packet (see page 6, lines 4-7), even though it has different services inside in their native (i.e., original protocol) form (page 3, lines 23-25). If it is desired to transmit these packets in a conventional transmission frame, the method may further include the conventional steps of adding a routing tag to each packet and inserting a plurality of packets into a transmission frame for transmission.

The invention, by creating packets having at least two different services therein, permits one or more services, in their original protocols, coming from at least two bit streams, and possibly more, to be divided up into different size units, so that "empty" spaces on the bandwidth can be filled, thereby increasing efficiency of the overall system (see page 3, lines 20-22). This method is not taught or suggested in any of the prior art known to Applicants or cited in the Office Action.

This method, and an engine for carrying out this method, have been more precisely claimed in amended claims 17 and 19. Specifically, the claims have been amended to indicate that incoming bit streams containing at least two services are identified (by their source and destination addresses) and segmented, and each segment is provided with a tag identifying the service in the segment. Tagged segments of at least two services are inserted into a single packet.

According to one embodiment of the invention, claimed in new claim 21, this formed packet then receives a routing tag and is inserted, with other packets, into a transmission frame. Support for these claims is found, *inter alia*, on page 8, lines 1-7, and 17-19.

As explained in detail during the interview, the patent to Ravikanth relates to a generic label encapsulation protocol

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for carrying IP packets (packet-based services). This protocol utilizes datagrams, which are pre-formed conventional data packets, and adds a routing tag for improved efficiency of routing of the packets through the network. There is no teaching or suggestion of combining two or more services into a single packet, as claimed. Rather, the Ravikanth method is merely one method by which existing or pre-formed packets can be routed through a network.

Ravikanth deals with Ethernet services which are sent via IP protocol only. There is no need for a label identifying the service inside the packet (third step of amended claim 17), since only one type of service is sent over Ravikanth's network; only a routing tag is necessary. Further, Ravikanth cannot transport voice services, video streaming services, storage services such as Fibre Channel services, for example, since they are not label switched packets. Thus, he can send Ethernet services from any protocol layer (e.g., IP, MPLS), but not different services as defined in the present application. In fact, as stated above, the packet based services which are provided as datagrams in Ravikanth can be segmented according to the invention and formed into the packets of the invention alone, or with other types of services.

The Office Action further states that Ravikanth discloses that SONET is used for data transmission over optical fibers. SONET (and SDH) in this usage is a transport protocol. This means that data TDM and packet data can be converted to SONET protocol and transmitted in a SONET transmission frame. Packets of the invention can also be sent over SONET as a transport medium, or over MPLS as a transport medium, over another conventional transport medium (or over their own network). In the case of SONET, MPLS, and other conventional transport protocols, an address label or tag is added to the

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novel packet, and the packet is converted to the transport protocol, as claimed in new claim 21.

In addition, those skilled in the art will appreciate that, for purposes of the invention, SONET/SDH is also a "service" in itself, and can be segmented and inserted into packet according to the invention. Thus, the invention is directed a method for multiplexing (combining together) at least two different services into a single packet. According to the invention, segments of bit streams of voice services can be combined with segments of streams of video streaming services and with segments of streams of Ethernet (packet-based) services. This capability is not provided by any art known to the Applicant or cited in the Office Action, including Ravikanth. The claims as amended more clearly claim this distinction, claiming segmenting at least two bit streams, each bit stream of one service, where the bit streams can be the same services or different services.

The Ndousse article on PPP Extensions examines the dynamics of IP traffic over SONET/SDH using PPP in HDLC-like framing. There is no teaching or suggestion in Ndousse of the method of forming packets, as claimed in amended claims 17 and 19. Applicants are not claiming encapsulating a packet into a PPP-HDLC frame, *per se*, but only in the context of the method of claim 17 and the system of claim 19.

Regarding the Response to Arguments, the above explanation is thought to have clarified that pre-formed datagrams are indeed different from the packets of the invention, most certainly in the method by which these packets are created.

The Office Action points to the non-limiting Example in the specification which utilizes an Ethernet frame as a "segment" for purposes of creating a packet. The segments according to the invention can have variable length between

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and within a particular service; see page 6, lines 11-16. Thus, while the length of the bit stream selected for a segment may be the length of an Ethernet frame in its entirety, the bit stream could, alternatively, be cut into segments of smaller or larger size than an Ethernet frame, starting at the beginning or in the middle of the frame, as desired at the time. In this way, the length of the segments may be determined at the time of filling the packet, so as to fill, as completely as possible, the bandwidth in each frame.

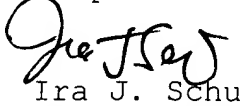
The Office Action has noted that the specification does not support cutting a frame into several segments. The specification does, however, support segmenting a bit stream into variable length segments which, as stated above, may or may not start or end in the same place as an Ethernet frame, or a TDM time slot or an ATM cell.

It is also noted that "class of service" does not refer to type of service, as defined in the invention, but rather to level of priority given to certain types of traffic in service provider agreements. Thus, the addition in Ravikanth of an MPLS label indicating class of service does not identify source or destination or type of service, but only what priority the data is given during transmission.

Withdrawal of these rejections is requested.

In view of the foregoing amendments and remarks, Applicants submit that the present application is now in condition for allowance. An early allowance of the application with amended claims is earnestly solicited.

Respectfully submitted,



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